USOE STEM Statement

Science, Technology, Engineering, and Mathematics (STEM) education is critical to ongoing economic success in Utah. Nationwide, growth in STEM careers outpaces that of any other occupational category. STEM occupations grow more quickly than the economy as a whole and provide opportunities at all levels of education. In addition STEM careers offer higher beginning salaries and more career earning potential than most other fields. Today's careers require STEM skills at all levels of employment from service industries to engineering. Young adults who do not possess high level skills in mathematics, science and technology are at a significant career disadvantage not only because of the tremendous opportunities for high-wage, high demand STEM careers, but also because these skills are vital for success in other industry sectors. This combination of high need and high opportunity in STEM fields requires us to consider the proper preparation and support for individuals pursuing STEM studies.

STEM education is best sustained by supporting both individual content areas and integrated experiences. Mathematics and Science build the foundation for students to apply learning in Technology and Engineering coursework. Integrated coursework and projects can be used to support both the academic Core Standards and the Career and Technical Program Standards. Furthermore, all four work together as students engage in design challenges, laboratory experiences, and internships with rapidly growing STEM companies. STEM education requires an integrated learning approach where engineering is valued as more than activities in academic courses, where technology is seamlessly integrated throughout, and where there are high expectations for achievement in mathematics and science.

STEM education in Utah must support the critical competencies of knowledge, skill, ability, work interest, and work values. Coursework in mathematics and science builds content knowledge and skill fundamental to STEM while coursework in other subject areas such as language arts and social studies provide opportunities to improve processing, research, and communication skills that support STEM fields. In Utah, STEM includes Health, both because of the considerable applications of STEM to health careers, but also because of the health science research supporting wellness as a building block to brain function. Problem-solving is critical to STEM success and should be evident in all classrooms. Career and technical studies in specific fields such as engineering or technology provide opportunities for students to apply knowledge and skill while building work interest. Each individual STEM field enhances the others. Finally, the entire school community works together to promote work values that include recognition, achievement, security, and responsibility.

The Utah State Office of Education is committed to supporting STEM education in Utah by maintaining and improving the K-12 education system while collaborating with higher education and industry. It is the responsibility of public schools to provide foundational knowledge and skill along with associated experiences in career and technical studies. USOE works with higher education to develop and sustain up-to-date STEM competencies and research based instructional strategies for incoming and practicing teachers. The office identifies and promotes effective programs that will build student interest in STEM fields and supports those programs whenever possible. In order to continue this effort, additional

support for ongoing professional development and replication of promising practices is necessary. Many initiatives established in the Mathematics Steering Report (2009) have been implemented; however, more work is necessary, including work in science, technology, and in engineering. Resources for instruction, support for professional development, and hiring of personnel such as mathematics coaches have led to improvements in STEM education, but more is needed. Assisting struggling students (Tier 2 interventions), internships, and support for STEM competitions all show promise of improving STEM education in Utah. We are eager to partner with others seeking these improvements as we work together for the students of Utah.